

**REMARKS**

At the time of the Office Action dated May 6, 2004, claims 1-20 were pending, all of which stand rejected.

In this Amendment, claims 1, 5, 9 and 16-20 have been amended. Care has been exercised to avoid the introduction of new matter. Claims 1 and 5 have been amended to include the recitation “the upper electrical connecting end surface of each of the outer leads is disposed laterally with respect to the uppermost surface of the sealing member.” Adequate descriptive support for the above recitation can be found in, for example, Fig. 2 and relevant description of the specification. Claim 15 has been amended to improve wording. Claims 16-20 have been amended to be dependent on claim 15.

**Claims 1, 2, 4-6, 8 and 15 have been rejected under 35 U.S.C. §102(e) as being anticipated by Tandy.**

In the statement of the rejection, the Examiner asserted that Tandy discloses a package stack via a bottom leaded plastic packaging identically corresponding to what is claimed.

It is well established that the factual determination of lack of novelty under 35 U.S.C. §102 requires the identical disclosure in a single reference of each element of the claimed invention, such that the identically claimed invention is placed into the possession of one having ordinary skill in the art. *Helifix Ltd. v. Blok-Lok, Ltd.*, 208 F. 3d 1339, 54 USPQ2d 1299 (Fed. Cir. 2000); *Electro Medical Systems S.A. v. Cooper Life Sciences, Inc.*, 34 F.3d 1048, 32 USPQ2d 1017 (Fed. Cir. 1994).

Based on the above legal tenet, Applicants submit Tandy does not disclose a semiconductor package claimed in **claim 1** and a semiconductor device claimed in **claim 5**

containing all the limitations recited in the claims. Specifically, it is apparent that Tandy does not disclose a package or device in which “the upper electrical connecting end surface of each of the outer leads is disposed laterally with respect to the uppermost surface of the sealing member,” recited in the claims (emphasis added).

Tandy in Fig. 5 apparently shows that an end of the outer lead 118 does not have an “electrical connecting end surface” and the end of the outer lead 118 is not disposed laterally with respect to the uppermost surface. As shown in Fig. 5, Tandy’s device is connected to another through a portion of the outer lead 118, other than the end. Further, the end of the outer lead 118 faces a top surface 117 of a package 120, which shows that the end of the outer lead 118 is not disposed laterally with respect to the upper most surface of the sealing member (a top surface 117 of a package 120 of Tandy). Therefore, there are significant differences between the claimed invention as amended and a package disclosed by Tandy.

The above-described fundamental difference between the claimed invention and Tandy shows that Tandy does not identically describe the claimed invention within the meaning 35 U.S.C. §102 for **claims 1 and 5**.

With respect to **claim 15**, the Examiner asserted that “Tandy teaches the bottom lead surface (114) of the outer lead (118), which is formed on a circuit board (printed wiring board) (column 4, lines 28-32).” Then, the Examiner concluded that “it inherently teaches each of the semiconductor packages arranged to be mounted on the printed wiring board such that the uppermost surface of the sealing member faces the printed wiring board.” See the ultimate paragraph at page 5 of the Office Action.

In response, Applicants submit that the Examiner did not discharge the initial burden of establishing a *prima facie* basis to deny patentability to the claimed invention under 35 U.S.C.

§102 for lack of novelty, and that the Examiner's reliance upon the doctrine of inherency is misplaced.

In order to rely upon the doctrine of inherency, the Examiner is required to identify a factual basis upon which to predicate the determination that an allegedly inherent feature would necessarily flow from the teachings of the applied prior art. *Finnegan Corp. v. ITC*, 180 F.3d 1354, 51 USPQ2d 1001 (Fed. Cir. 1999); *In re Robertson*, 169 F.3d 743, 49 USPQ2d 1949 (Fed. Cir. 1999). As articulated by the Board of Patent Appeals and Interferences in *ex parte Schricker*, 56 USPQ2d 1723, 1725 (BPAI 2000):

However, when an examiner relies on inherency, it is incumbent on the examiner to point to the "page and line" of the prior art which justifies an inherency theory. *Compare, In re Rijckaert*, 9 F.3d 1531, 1533, 28 USPQ2d 1955, 1957 (Fed. Cir. 1993) (when the PTO asserts that there is an explicit or implicit teaching or suggestion in the prior art, it must indicate where such a teaching or suggestion appears in the prior art); *In re Yates*, 663 F.2d 1054, 107, 211 USPQ 1149, 1151 (CCPA 1981).

The Examiner did not discharge that burden.

Specifically, Applicants emphasize that Tandy's description cited by the Examiner does not suggest that "each of the semiconductor packages is arranged to be mounted on the printed wiring board such that the uppermost surface of the sealing member faces the printed wiring board," recited in claim 15 (emphasis added). The Examiner's cited portion is as follows: "The bottom lead surface 114 of the intermediate lead portion 112 of each lead comprises a bonding surface for conductive connection to a semiconductor device, a circuit board, or other conduit or electrical apparatus" (column 4, lines 28-32).

It is Applicants' understanding that the cited portion describes Tandy's device having the bottom lead surface 114 which can be connected to a circuit board. However, this is not enough to conclude that Tandy inherently teaches the claimed arrangement of each semiconductor

package because the Examiner overlooked the recitation “the uppermost surface of the sealing member faces the printed wiring board” (emphasis added). In Tandy’s device 100 shown in Fig. 5, a top surface 117 may be considered to be the uppermost surface of a polymeric package 120 (sealing member) according to the definition of the uppermost surface in claim 15. This is so because the top surface 117 is located over the upper surface of a die 102 (the upper surface of the die 102 is not a surface facing a die pad (according to the Examiner, a portion of lead formed under the die 102 corresponds to the claimed die pad)).

Therefore, it is apparent that the Examiner’s cited portion does not suggest the claimed arrangement of the packages, i.e., “each of the semiconductor packages is arranged to be mounted on the printed wiring board such that the uppermost surface of the sealing member faces the printed wiring board” (emphasis added). Rather, Tandy suggests that the package 120 can be mounted on a printed wiring board such that the lower surface (bottom package surface) 116 of the package 120 faces the printed wiring board. Therefore, Tandy’s description is inconsistent with what is claimed in claim 15, and undermines the Examiner’s assertion.

Accordingly, the Examiner has not established the requisite basis upon which to invoke the doctrine of inherency which requires certainty. In addition, there is a sufficient basis in the reference to Tandy itself to undermine the inherency theory. Applicants, therefore, submit that Tandy does not disclose a semiconductor device including all the limitations recited in claim 15, and therefore, does not have identical disclosure of each element of the claimed invention in the meaning of 35 U.S.C. §102.

It is noted that a dependent claim is not anticipated if the independent claim upon which it depends is allowable because all the limitations of the independent claim are contained in the dependent claim. Therefore, claims 2, 4, 6 and 8 are patentable because they respectively

include all the limitations of independent claims 1 and 5. The Examiner's additional comments with respect to claims 2, 4, 6 and 8 do not cure the argued fundamental deficiencies of Tandy.

Accordingly, Applicants respectfully solicit withdrawal of the rejection of claims 1, 2, 4-6, 8 and 15, and favorable consideration thereof.

**Claims 3 and 7 have been rejected under 35 U.S.C. §103(a) as being unpatentable over Tandy.**

In the statement of the rejection, the Examiner admitted that Tandy does not show that the sealing member has four sides surrounded by the outer leads. However, the Examiner concluded that it would have been obvious to modify Tandy to arrive at the claimed invention to increase the number of external connection between the die and the external circuit.

In response, Applicants submit that it is well settled that all the claim limitations must be taught or suggested by the prior art to establish *prima facie* obviousness of a claimed invention. *In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974).

Based on this legal tenet, Applicants submit that Tandy does not teach or suggest a semiconductor package (claim 3) and a semiconductor device (claim 7) including all the limitations recited in the claims. As discussed above, Tandy does not disclose a package or device in which “the upper electrical connecting end surface of each of the outer leads is disposed laterally with respect to the uppermost surface of the sealing member,” recited in independent claims 1 and 5 (emphasis added), upon which claims 3 and 7 respectively depend. Therefore, it is submitted that Tandy does not teach or suggest all the limitations recited in claims 3 and 7. *See In re Royka*, 490 F.2d 981.

Accordingly, Applicants respectfully solicit withdrawal of the rejection of claims 3 and 7, and favorable consideration thereof.

**Claims 9-12, 14, 16-18 and 20 have been rejected under 35 U.S.C. §103(a) as being unpatentable over Tandy in view of Tsuji.**

In the statement of the rejection of independent claim 9, the Examiner admitted that Tandy does not teach forming electrodes on the printed wiring board. Then, the Examiner applied Tsuji, asserting that the reference teaches the missing feature and concluding that it would have been obvious to modify Tandy's package based on the teachings of Tsuji to arrive at the claimed invention to provide interconnection between the semiconductor device and the external device. Specifically, the Examiner asserted that Tandy inherently teaches a semiconductor device in which "a plurality of semiconductor packages [are] arranged to be mounted on a printed wiring board, each semiconductor package having an upper surface of a sealing member thereof facing the printed wiring board..." as recited in claim 9 (see the third full paragraph on page 7 of the Office Action).

In response, Applicants submit that the Examiner did not discharge the initial burden of establishing a *prima facie* basis to deny patentability to the claimed invention under 35 U.S.C. §103 for obviousness, and that the Examiner's reliance upon the doctrine of inherency is misplaced. See *In re Royka*, 490 F.2d 981; *Finnegan Corp.*, 180 F.3d 1354; *In re Robertson*, 169 F.3d 743. For the reasons set forth above with respect to claim 15, the Examiner has not established the requisite basis upon which to invoke the doctrine of inherency which requires certainty, and there is a sufficient basis in Tandy itself to undermine the Examiner's inherency theory. Moreover, the secondary reference, Tsuji, does not cure this deficiency of Tandy.

Accordingly, the proposed combination of Tandy and Tsuji does not teach or suggest each and every limitation of claim 9. Therefore, the proposed combination does not satisfy the requirement under §103.

Applicants note that if an independent claim is nonobvious under 35 U.S.C. §103, then any claim depending therefrom is nonobvious. *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988). Accordingly, as claim 9 is patentable for the reasons set forth above, it is submitted that dependent claims 10, 11, 12 and 14 which respectively depend from claim 9 are also patentable. The Examiner's additional comments with respect to the claims do not cure the argued fundamental deficiencies of the proposed combination of Tandy and Tsuji.

Further, it is submitted that claims 16, 17, 18 and 20 are also patentable because the proposed combination does not inherently teach that "each of the semiconductor packages is arranged to be mounted on the printed wiring board such that the uppermost surface of the sealing member faces the printed wiring board," recited in claim 15, upon which those claims depend (emphasis added). Therefore, the proposed combination does not teach or suggest all the limitations recited in claims 16, 17, 18 and 20. *See In re Royka*, 490 F.2d 981.

Therefore, Applicants respectfully solicit withdrawal of the rejection of claims 9-12, 14, 15-18 and 20 and favorable consideration thereof.

**Claims 13 and 19 have been rejected under 35 U.S.C. §103(a) as being unpatentable over Tandy in view of Tsuji and further in view of Nagesh et al.**

In the statement of the rejection, the Examiner admitted that the proposed combination of Tandy and Tsujii does not teach that the die pad of the semiconductor package is provided on its exposed surface with a cooling fin. Then, the Examiner asserted that Nagesh et al. teaches a heat

obvious to modify a package of Tandy and Tsuji based on the teachings of Nagesh et al. to dissipate heat from the die.

In response, Applicants submit that as claims 9 and 15 are patentable for the reasons set forth above, dependent claims 13 and 19 which respectively depend from claims 9 and 15 are also patentable. *See In re Fine*, 837 F.2d 1071. The Examiner's citation of Nagesh et al. and additional comments with respect to the claims do not cure the argued fundamental deficiencies of the proposed combination of Tandy and Tsuji.

Accordingly, Applicants respectfully solicit withdrawal of the rejection of claims 13 and 19, and favorable consideration thereof.

**Conclusion.**

Accordingly, it is urged that the application is in condition for allowance, an indication of which is respectfully solicited. If there are any outstanding issues that might be resolved by an interview or an Examiner's amendment, Examiner is requested to call Applicants' attorney at the telephone number shown below.

To the extent necessary, a petition for an extension of time under 37 C.F.R. 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account 500417 and please credit any excess fees to such deposit account.

Respectfully submitted,

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Recognition under 37 C.F.R. 10.9(b)

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